Table 1. Patient and treatment characteristics

Patient characteristics	
Total number of patients	15
Total number of sites	37
Sex Male	9
Female	6
Median age at treatment in years (range)	73 (54-88)
Histological subtype	
Diffuse large B cell lymphoma	12 (32 sites)
Mantle cell lymphoma	3 (6 sites)
Median time from diagnosis to LDRT in months (range)	11.8 (0.23-195.1)
Median number of prior systemic therapies (range)	2 (1-7)
Treatment characteristics	
Site treated (n=37)	
Nodal	6
Extra-nodal (parotid, stomach, brain, orbit and oropharynx)	7
Skin	19
Bone	5
Radiotherapy dose/number of fractions	
4Gy/1	1
4Gy/2	15
6Gy/1	1
8Gy/1	2
8Gy/2	16
8Gy/4	2

Overall response rate (ORR) for all sites was 89.2% (33/37 sites). 17 sites (45.9%) achieved a complete response (CR) and 16 sites (43.2%) a partial response. 4 sites (10.8%) did not respond to LDRT. Considering ORR by patient, 11/15 patients (73.3%) had a response to LDRT at all sites, 3/15 (20%) did not respond and 1 patient responded at 2 sites but not the 3rd.
Skin was the most commonly treated site (19/37, 51.4%) and skin sites had the highest ORR at 100%, with 73.7% (14/19) CR. This was statistically significant when compared to all other sites (p=0.046). ORR for nodal sites was 83.3% (5/6) and extra-nodal sites was 85.7% (6/7). Bone sites had the lowest ORR at 60% (3/5 cases) with no CR.
16 sites received a total dose of 4Gy in 1 or 2 fractions. 21 sites received either 6 or 8Gy in total. ORR in both groups was similar (87.5% versus 90.5%, p =1). Toxicity from LDRT was minimal, with no toxicity recorded above grade 2.
Of the 33 initially responding sites there have been 4 infield recurrences (12.1%). Median TTP was 4.8 months (3.1-11.8). 2 sites were retreated with further symptomatic benefit. Median duration of response was 3.6 months (0.5-126.7). 6 sites (2 patients) had responses lasting >30 months. The majority of patients died without documented local recurrence, with median overall survival from LDRT of 2.4 months (0.03-126.7).

Conclusion: LDRT is an effective palliative treatment for patients with RR HGNHL and anticipated short survival, achieving high response rates and excellent local control, with minimal toxicity and inconvenience. A small subgroup of patients with slowly relapsing disease derived durable remissions with LDRT.

PO-0671

Risk of cardiac damage after mediastinal radiotherapy for Hodgkin's disease

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Purpose or Objective: Hodgkin lymphoma (HL) has become a highly curable lymphoid malignancy. The improved prognosis of HL has been accompanied by increasing incidence of adverse late effects. Mediastinal radiotherapy (RT) and cardiotoxic chemotherapy (CT) with anthracyclines are routinely used to treat HL, but they could be associated with a variety of cardiovascular complications in long-term HL survivors. The aim of this study is to evaluate the late cardiovascular toxicity of a series of 202 patients treated from 1995 to 2012.

Material and Methods: 420 patients (pts) were treated for HL with RT +/- CT at our institution from 1995 to 2012. All the alive patients were contacted and invited to participate to the study. A detailed medical history of the 202 pts who accepted and subscribed informed consent was obtained, collecting events occurred after treatment; they had medical examination, ECG, Echocardiogram TT and blood tests. Treatment features were extracted from medical records. The entire group was divided in two groups: 157 pts received mediastinal RT (cases) and 45 pts did not (controls). The cardiac events were categorized using CTCAE ver. 4.0. A preliminary descriptive statistic using SPSS® software (x2 test) has been performed and here presented. The contouring of the different cardiac structures for dosimetric evaluation is ongoing.

Results: The patients and therapeutic characteristics of the patients are summarized in Table 1. After a median follow-up of 8 years (range 2-20 years) 144 pts (71,3%) manifested cardiac alterations: 1,0% arrhythmia, 2,5% ischemia, 1,5% heart failure and 66,3% valvular fibrosis without statistical differences between cases and controls. Most patients (75,4%) had asymptomatic grade I-II valvular fibrosis; only one had grade III valvular fibrosis. After treatment, with a median follow up time of 11,2 years, (range 4,1-17,8 years), acute myocardial infarction occurred in 5 pts, all in the group of cases.

		CASES	CONTROLS	TOTAL	p value
SEX	M	63 (40,1%)	32 (71,1%)	95 (47%)	<0,001
	F	94 (59,9%)	13 (28,9%)	107 (53%)	
MEDIAN AGE	(range)	35 yy (18-77)			
AGE	<28 y	46 (29,3%)	8 (17,8%)	54 (26,7%)	<0,001
	28-41 y	67 (42,7%)	9 (20,0%)	76 (37,6%)	
	42-64 y	42 (26,8%)	21 (46,7%)	63 (31,2%)	
	>64 Y	2 (1,3%)	7 (15,6%)	8 (4,5%)	
HYPERTENSION	YES	8 (5,1%)	7 (15,6%)	15 (7,4%)	0,018
	NO	149 (94,9%)	38 (84,4%)	187 (92,6%)	
DIABETES	YES	4 (2,5%)	3 (6,7%)	7 (3,5%)	0,183
	NO	153 (97,5%)	42 (93,3%)	195 (96,5%)	
SMOKE	YES	40 (25,5%)	19 (42,2%)	59 (29,2%)	0,029
	NO	117 (74,5%)	26 (57,8%)	143 (70,8%)	
ALCOHOL	YES	42 (26,8%)	24 (53,3%)	66 (32,7%)	0,001
	NO	115 (73,2%)	21 (46,7%)	136 (67,3%)	
FAMILY HISTORY OF CAD	YES	126 (80,3%)	33 (73,3%)	159 (78,7%)	0,317
	NO	31 (19,7%)	12 (26,7%)	43 (21,3%)	
HISTOLOGY	NS	114 (72,6%)	10 (22,2%)	124 (61,4%)	<0,001
	MC	11 (7,0%)	9 (20,0%)	20 (9,9%)	
	NLP	4 (2,5%)	13 (28,9%)	17 (8,4%)	
	LR	1 (0,6%)	3 (6,7%)	4 (2,0%)	
	LD	1 (0,6%)	0 (0,0%)	1 (0,5%)	
	NOS	26 (16,6%)	10 (22,2%)	36 (17,8%)	
STAGE	I-II	119 (75,8%)	35 (77,8%)	154 (76,2%)	0,783
	III-IV	38 (24,2%)	10 (22,2%)	48 (23,8%)	
TREATMENT	RT+CT	149 (94,9%)	33 (73,3%)	182 (90,1%)	0,000
	RT alone	8 (5,1%)	12 (26,7%)	20 (9,9%)	
TREATMENT	RT-CT with anthracyclines	141 (89,8%)	27 (60,0%)	168 (83,2%)	<0,001
	RT-CT no anthracyclines	8 (5,1%)	6 (13,3%)	14 (6,9%)	
	RT alone	8 (5,1%)	12 (26,7%)	20 (9,9%)	
MEDIASTINAL DOSES	0 Gy	0 (0,0%)	45 (100,0%)	45 (100,0%)	<0,001
	< 30 Gy	1 (0,6%)	0 (0,0%)	1 (0,5%)	
	30 Gy	57 (36,3%)	0 (0,0%)	57 (28,2%)	
	>30-36 Gy	44 (28,0%)	0 (0,0%)	44 (21,8%)	
	> 36 Gy	55 (35,0%)	0 (0,0%)	55 (27,2%)	
TOTAL		157 (77,8%)	45 (22,2%)	202 (100%)	

TABLE 1. Legend: NS: nodular sclerosing; MC: mixed-cellularity subtype; NLP: nodular lymphocyte predominant; LR: lymphocyte rich; LD: lymphocyte depleted; NOS: unspecified

Conclusion: The study does not show a direct association between late cardiac toxicity and mediastinal RT. Multi-parametric statistical analysis to evaluate a possible

correlation between the different variables and cardiac damage is ongoing.

Poster: Clinical track: Breast

PO-0672

Ten years experience of breast reconstruction after mastectomy in previously irradiated patients

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Purpose or Objective: To evaluate the rate of complications and the aesthetic outcome in previously irradiated patients who underwent mastectomy and subsequent prosthetic reconstruction in 2 times.

Material and Methods: Eighty-three patients who underwent immediate postmastectomy reconstruction with tissue expander between January of 2003 and June of 2012 at the Campus Bio-Medico University Hospital in Rome were retrospectively divided into two groups: Group A (study group) included 30 patients with previous quadrantectomy and radiotherapy who underwent salvage mastectomy after local recurrence and Group B (control group) included 53 patients submitted to primary radical mastectomy. Patients and disease characteristics were analysed and complications were correlated to treatment group.

Results: The median follow-up time for the whole group was 36 months (range= 12-144 months). Between group A and group B, there were no significant differences in terms of age, body mass index, comorbidities, pathological stage, treatments data (p=NS). In Group A 25/30 patients (83.33%) completed heterologous reconstruction. In 5 patients (16.67%) a conversion to combined or solely autologous reconstruction was needed. In Group B, 52/53 patients (98.11%) completed heterologous reconstruction. In 1 case (1.88%) the expander was removed due to infection and an autologous reconstruction was performed. Revision surgery was needed in 5 patients (9.4%). Autologous salvage reconstruction was more frequent for Group A patients (relative risk 10.4, p=0.02). The overall rate of complications was not different between the two groups (66.6% vs 58.5%; p=0.49) even if major complications (vast necrosis of mastectomy flaps with or without partial implant exposure, with or without implant removal, all III and IV-degree capsular contractures, either requiring or not requiring further surgery) were non significantly higher in the irradiated group (53.3% vs 32.0%; p= 0.07). However, analysing capsular contracture, a significantly higher risk of grade III-IV were recorded in Group A (40% vs 15%; relative risk 3.75, p=0.02). In Group A the median time from RT to reconstruction was 24 months (range= 9-192 months) and the incidence of major complications was not related to time from RT to reconstruction (p=0.313).

Conclusion: Heterologus reconstruction after salvage mastectomy in previously irradiated patients, is still possible with satisfactory results.

PO-0673

Common European mitochondrial haplogroups in the risk of RT-induced breast fibrosis

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Purpose or Objective: Germline polymorphisms in oxidative stress response genes have been postulated to be involved in the development of late normal tissue complications following radiotherapy. Despite the key role of mitochondria in the production of reactive oxygen species, the contribution of mitochondrial DNA variations to clinical radiosensitivity is still largely unknown. In the present study, we evaluated the association between mitochondrial DNA haplogroups and the risk of radiation-induced subcutaneous fibrosis after postoperative radiotherapy in breast cancer patients.

Material and Methods: Subcutaneous fibrosis was scored according to the Late Effects of Normal Tissue-Subjective Objective Management Analytical (LENT-SOMA) scale in 286 Italian breast cancer patients who received radiotherapy after breast conserving surgery. Eight mitochondrial DNA (mtDNA) SNPs that define the nine major haplogroups in the European population were determined by PCR–RFLP analysis on genomic DNA extracted from peripheral blood.

Results: In a Kaplan-Meier analysis evaluated by the log-rank test, carriers of haplogroup H were found at lower risk of grade ³2 subcutaneous fibrosis (P=0.018). In the multivariate Cox regression analysis adjusted for clinical factors (BMI, breast diameter, adjuvant treatment, dose per fraction, radiation type and acute skin toxicity), the haplogroup H emerged as significant protective factor for moderate to severe radiation-induced fibrosis (HR: 0.50, 95% CI 0.27-0.92, P=0.027).

Conclusion: Our results support a protective role of the mitochondrial haplogroup H in the development of radiation-induced fibrosis in breast cancer patients. Further prospective studies with larger sample size and different populations are nevertheless warranted to corroborate the possible influence of mitochondrial haplogroups on late normal tissue radiosensitivity.

PO-0674

Factors influencing patient reported cosmetic outcome: results of the Young Boost Trial

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Purpose or Objective: The Young Boost trial (YBT), a multicenter RCT (NCT00212121), investigates whether a higher boost dose leads to a lower recurrence rate in young patients treated with breast conserving therapy. Cosmetic outcome is the secondary objective. The aim of the current analysis is to investigate the factors influencing the patients' opinion about cosmesis.

Material and Methods: From 2004-2011, 2421 breast cancer patients ≤ 50 yrs were included in The Netherlands, France, and Germany. All patients were treated with lumpectomy, followed by 50 Gy whole breast irradiation. Patients were randomized to receive a standard 16 Gy (n=1211) or a high 26 Gy boost (n=1210) to the tumour bed. Cosmetic outcome data at 4 years of 807 patients were used for the current analysis according to the following two scoring systems:
1. BCCT.core: Digital photographs were analyzed using a software program to extract an overall cosmetic score: excellent, good, fair or poor. This score is based on symmetry, skin color and scar visibility. The 7 features of symmetry in the BCCT.core program are: nipple position (pBRA), level of lower breast contour (pLBC), level of nipple (pUNR), distance from nipple to inframammary fold (pBCE), length of breast contour (pBCD), area of the breast (pBAD) and non-overlapping area between left and right breast (pBOD). 2. Patients' score using a validated patient's questionnaire about the breast appearance, including an overall score: very satisfied, satisfied, not dissatisfied, dissatisfied or very dissatisfied. First, we analyzed the 7 features of BCCT.core in a proportional odds model, to